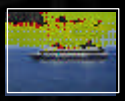
Designing, Understanding and Operating Complex Human/Machine Systems






David Zeltzer, Fraunhofer Center for Research
in Computer Graphics, Chair

Rob Molloy, U.S. National Transportation Safety Board
Bill Buxton, Alias/Wavefront, SGI
Chris Miller, SMArt Information Flow Technologies
Steve Chien, Jet Propulsion Laboratory

"My Program Crashed!"

- In The Early Days of Computing, Human/Machine Interface Design Was Largely Academic

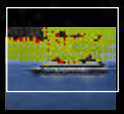
"My Program (train, airplane, ship, . . .) Crashed!"

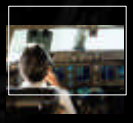
- Today, Human-in-the-Loop, Computer-Based Systems Are Ubiquitous, and Important in Our Daily Lives
  - Air transport and ATC, metro transit, plant control, . . .



Human/Machine Interfaces for Highly Complex, Automated Systems

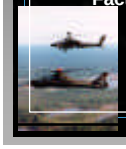
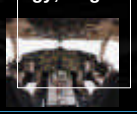
- Many of These Computer-Based Systems Involve Time- and Safety-Critical Human/Machine Interaction
- Who's Designing the Interfaces??





Problem

- IT Industry and Computer Science Focus on Desktop, Handheld and Wireless Devices
- Many of Today's Computer-Based Systems are *Orders-of-Magnitude* More Complex, With Multiple *Levels of Automation*
- Need: Interdisciplinary Design Teams
  - Computer Science, Engineering, Human Factors, Psychology, Cognitive Science, . . .


Panelists

- ***Deborah Bruce*, Chief, Safety Studies and Statistical Analysis, NTSB, will highlight incidents and accidents related to problems with automation and the human/machine interface**
- ***Bill Buxton*, Chief Scientist, Alias | Wavefront, will describe some fundamental principles for HMI design**
- ***Chris Miller*, Chief Scientist, Smart Information Flow Technologies, will describe successful work on the *Rotorcraft Pilots' Associate* for the flight deck of the Apache helicopter**
- ***Steve Chien*, Head, AI Group, JPL, will point to some open research questions regarding how humans might interact with remote, automated systems**